

Renewable Governance: Good for the Environment?

Alexander Dyck, Karl Lins, Lukas Roth,
Mitch Towner, Hannes Wagner

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- Institutional investors are increasingly concerned about firms' environmental sustainability choices.
- In the survey of Krueger, Sautner, and Starks (2019) institutional investors state that:
 - Environmental risks have **financial risks** for their portfolio firms and that these risks have **begun to materialize**.
 - Risk management/**engagement is important** to address these risks, and is more important than divestment.

- Why might outside investors have concerns that *insiders* choices regarding environmental performance won't be optimal?
 - insiders, when short-term oriented, will not invest enough today to mitigate future environmental risks – Benabou and Tirole (2010)
 - In theory, ownership should be enough, because of obtained control rights.
 - But, control rights are meaningful only when there is **effective governance**.
- Our **main questions**:
 1. Do governance mechanisms (G) drive firms' environmental performance (E)—that is, does G come before E?
 2. What specific aspects of governance provide the greatest impact?

We draw a distinction between 'Traditional' and 'Contemporary' Governance measures

First, explore traditional governance measures

1. Outside investors mostly or fully lack control rights when firms controlled by **family** or other blockholder
2. Measures of outsider control rights long emphasized in the literature
 - Example: Aggarwal et al. (2009) index. Note: such indices feature significant emphasis on director independence, which has limits if independent directors feel allegiance to insiders

We draw distinction between 'Traditional' and 'Contemporary' Governance measures

- Second, explore 'contemporary' governance measures that plausibly renew the mindset of the board. These have not been studied for E.
- *If there is a gap between insiders and outsiders on importance of concrete actions to address environmental risks, renewal may be key*
 1. Governance mechanisms that *refine the voting process* to nominate and elect investors' preferred directors. That is, move beyond independence, to investor voice.

Specifically focus on **majority voting rules**
 2. Governance mechanisms of *forced board renewal* from investor or social pressures.

Specifically focus on **female board representation.**

1. Framework

- When choosing to invest to improve E performance, Benabou and Tirole (2010) highlight two frictions that make the identity of the decision maker relevant for E performance:
 - Insider short-termism (career/comp. concerns, private benefits of control)
 - Non-pecuniary utility from environmental investments ('warm halo' effect; spend to do your part to fix negative externalities)
- Predictions:
 - Entrenched insiders will choose **higher** level of environmental performance than outsiders **only** if insiders have both negligible short-termism and place a higher value on the non-pecuniary benefits of E performance. $G \uparrow \Rightarrow E \downarrow$
 - In all other situations: $G \uparrow \Rightarrow E \uparrow$. Short-termism important. As can be non-pecuniary benefits.
 - Note: because of possible impact of differences in non-pecuniary benefits, cannot necessarily conclude increase in E NPV enhancing.

2. Environmental performance data

- Global firm-level environmental data from Thompson Reuters ASSET4 database. Broad coverage, with data since 2004.
 - ASSET4 analysts use firms' public disclosures (e.g., sustainability reports), public agency filings, and in-house investigations.
- We use the aggregated index that ASSET4 provides (z-scores).
 - Standardized to measure environmental performance relative to all other companies in a given year.
- We build our own measure based on the 70 line items for three environmental categories that ASSET4 reports.
 - We average these to build an equally-weighted environmental performance score.

Governance mechanisms

We start with, but don't focus on, a “Black Box” 38-item ASSET4 governance score (we modify it to exclude sustainability items they count as governance)

Traditional governance mechanisms that *are* a key focus:

- Blockholder control (most relevant for us: family blockholder)
- Indicator items as in Aggarwal et. al. (2009) that “have received the most attention in the academic literature and from observers.”
 - Board Independence, Audit Committee Independence, CEO-Chair Split, Absence of multiple voting stock classes, Board size >5 and <16, Board Structure has no staggered elections. It is an Index from 0-6.

Traditional governance mechanisms have limits. Contemporary mechanisms help to address.

- Traditional mechanisms rely in large part on independent directors
 - Independent directors often co-opted by insiders due to appointment process or other reasons (e.g. Coles, et. al. (2014))
- When there is a gap between outside investors and insiders on an issue, *renewing the mindset of the board*, may be needed.
 - Bebchuk and Hamdani (2017) suggest three mechanisms to refine voting process for directors
 - Nominating committees with independent directors, *majority voting*, enhanced proxy access.
 - Also, forced board turnover is a route to renewal
 - Term limits, age limits, *external pressures to increase female representation*

Mechanisms of board 'renewal' in our international sample

- Adoption of **majority voting** rules for director elections
 - Requires that a board member receives more than 50% of the votes cast (compared to a requirement to receive a plurality of votes cast).
 - Outside investors thus have more power to prevent insiders' candidates from joining the board.
 - Important governance variable (e.g., Cunat, Gine, Guadelupe, 2012; Ertimur, Ferri, Oesch, 2015, Doidge, Dyck, Mahmudi and Viranit, 2019).
- Pressure to increase **female board** representation
 - Forced board renewal coming from societal and investor pressure
 - New female board members likely not insiders (Ahern and Dittmar, 2012), thus more independent
 - Enhances skill sets of boards, including governance skills (Kim and Starks, 2016)

3. Empirical specification

- Is governance related to firms' environmental performance?
- Regression analysis of environmental performance on lagged measures of governance mechanisms, controlling for observables.

$$\text{Log}(\text{Score}_{it}) = \alpha + \beta X_{it-1} + \gamma' Y_{it-1} + \Lambda + \varepsilon_{it}$$

- Governance measures:
 - Traditional and Contemporary measures
- Controlling also for institutional ownership, firm characteristics, country, industry, and time.
- Standard errors are clustered at the country level.

Governance mechanisms and firms' environmental performance (Table 2, Panel A)

	ASSET4 Environmental z-Scores t					
	(1)	(2)	(3)	(4)	(5)	(6)
Family t_{-1}	-0.098*** (-3.12)	-0.103*** (-3.30)	-0.097*** (-3.12)	-0.109*** (-3.57)	-0.112*** (-3.79)	-0.102*** (-3.29)
ASSET4 Governance t_{-1}	0.815*** (6.00)					
Traditional Governance t_{-1}		0.033** (2.68)				0.026** (2.07)
Old or Stale Board t_{-1}			-0.080*** (-3.81)			
Majority Election t_{-1}				0.084*** (3.34)		0.072*** (2.77)
Female Director t_{-1}					0.142*** (4.66)	0.135*** (4.55)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs	20,531	20,531	17,435	20,531	20,531	20,531
Adjusted R ²	0.456	0.451	0.469	0.451	0.455	0.458

Economic significance

- **Family-controlled firms** associated with a **10% lower** score.
- **Trad. governance** assoc with a **3% greater** score
- **Majority election rule** assoc with a **7% greater** score.
- **Female director** assoc. with **14% greater** score.
- **Similar results** when using **equally-weighted E Score**

Natural to raise questions of causality

- Omitted variables that are correlated with both E performance and governance mechanisms. A potential concern. What we do:
 - Firm fixed effects regressions to control for time-invariant unobservables.
- Further Identification
 - In some countries in our sample, outside pressures forced adoption of either majority voting rules or female board representation.
 - Outside pressures plausibly disconnected from environmental pressures.
 - These quasi-exogenous shocks help us to identify the impact of governance on firms' environmental performance.
 - That is, we focus on firm changes when there is a push for improved governance that is exogenous to the firm (and unrelated to environmental performance). Still include firm fixed effects.

Firm fixed effects support causal interpretation (Table 3, Panel A)

	ASSET4 Environmental z-Scores				
	(1)	(2)	(3)	(4)	(5)
ASSET4 Governance	0.166** (2.48)				
Traditional Governance		0.014** (2.34)			
Old or Stale Board			-0.024** (-2.15)		
Majority Election				0.048*** (3.14)	
Female Director					0.030** (2.05)
Controls	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Obs	20,196	16,099	6,169	9,947	7,739
Adjusted R^2	0.856	0.857	0.864	0.825	0.834

Quasi-natural experiment: Shocks to majority election rules (Table 4, Panel A)

- Firm fixed effects focusing on specific time period when concerted exogenous push to increase governance: Canada: 2005/06 push from Canadian Coalition for Good Governance (CCGG) to adopt majority voting director elections (Doidge et al, 2019).
- Broad sample: 20+ percentage points increase in majority voting adoption in a single year.
- ‘Treated’ = 1 if firm adopted Majority Election rule during the ‘shock’ window

	Single Country Experience		Broad Sample Excl. Canada		Broad Sample	
	ASSET4 E z-Scores	Equally-weighted E Scores	ASSET4 E z-Scores	Equally-weighted E Scores	ASSET4 E z-Scores	Equally-weighted E Scores
	(1)	(2)	(3)	(4)	(5)	(6)
Post Majority Election Adoption × Treated	0.299** (2.34)	0.236** (2.43)	0.076* (1.80)	0.059* (1.91)	0.104** (2.58)	0.085*** (2.82)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs	197	197	1,057	1,057	1,254	1,254
Adjusted R^2	0.812	0.855	0.814	0.852	0.820	0.865
Countries in Sample	Canada		Australia, Austria, Belgium, Denmark, Ireland, Italy, Spain, Switzerland, UK		Australia, Austria, Belgium, Canada, Denmark, Ireland, Italy, Spain, Switzerland, UK	

Quasi-natural experiment: Female board representation (Table 5, Panel B)

- UK: 2011 Women on Boards review by Lord Davies who recommended that FTSE100 firms should have 25% female board representation within 4 years.
- Broad sample: 10+ percentage points increase in firms that have at least one female on the board; outside investor push or regulation verified.
- ‘Treated’ = 1 if firm added one or more female directors during the ‘shock’ window

	Single Country Experience		Broad Sample Excl. the UK		Broad Sample	
	ASSET4 E z-Scores	Equally-weighted E Scores	ASSET4 E z-Scores	Equally-weighted E Scores	ASSET4 E z-Scores	Equally-weighted E Scores
	(1)	(2)	(5)	(6)	(3)	(4)
Post Female Board Representation × Treated	0.082* (1.89)	0.049** (2.32)	0.085* (2.27)	0.055* (2.09)	0.080*** (3.77)	0.050** (3.21)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs	936	936	1,374	1,374	2,310	2,310
Adjusted R ²	0.879	0.935	0.919	0.952	0.910	0.949
Countries in Sample	UK		Australia, Austria, Germany, Greece, Italy, Malaysia, Portugal, Switzerland		Australia, Austria, Germany, Greece, Italy, Malaysia, Portugal, Switzerland, UK	

4. Do we find an impact of governance where E issues are most salient?: Countries with poorer E performance

	ASSET4 Environmental z-Scores					
	Low Country-level ASSET4 E z-Scores	High Country-level ASSET4 E z-Scores	Low Environmental Protection Index	High Environmental Protection Index	Outside Continental Europe Countries	Continental Europe Countries
	(1)	(2)	(3)	(4)	(5)	(6)
Family	-0.138** (-2.78)	-0.065 (-1.72)	-0.117*** (-3.01)	-0.103* (-2.02)	-0.131*** (-4.06)	-0.066 (-1.49)
Traditional Governance	0.039** (2.55)	0.013 (0.96)	0.032* (2.01)	0.028 (1.65)	0.026 (1.65)	0.021 (1.10)
Majority Election	0.075* (1.83)	0.067** (2.28)	0.087*** (2.90)	0.033 (1.57)	0.086*** (2.88)	0.028 (0.81)
Female Director	0.124*** (2.88)	0.141*** (5.90)	0.154*** (4.58)	0.115* (2.21)	0.143*** (4.25)	0.059 (1.43)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs	9,296	11,234	14,087	6,444	15,384	5,147
Adjusted R^2	0.419	0.392	0.455	0.441	0.448	0.452

In Family-Controlled Firms?

	ASSET4 Environmental z-Scores (1)	Equally-weighted Environmental Scores (2)
Family		
Traditional Governance	0.007 (0.39)	0.004 (0.32)
Majority Election	0.037 (0.80)	0.023 (0.65)
Female Director	0.124*** (3.08)	0.105*** (3.22)
Widely Held/Other		
Traditional Governance	0.031** (2.08)	0.024** (2.09)
Majority Election	0.083*** (2.84)	0.070*** (2.82)
Female Director	0.138*** (4.15)	0.106*** (4.63)
Controls	Yes	Yes
Country Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Obs	20,531	20,531
Adjusted R^2	0.458	0.535

Takeaways

- As expected, **No relation** between traditional governance measures and E scores
- **Board renewal through female director** positively related to E performance

In 'Dirty' Industries?

SIC Divisions	ASSET4 Environmental z-Scores		ASSET4 Environmental z-Scores	
	'Dirty' ABFGI	'Clean' CDEH	'Dirty' ABI	'Clean' CDEFGH
	(1)	(2)	(5)	(6)
Family	-0.091** (-2.28)	-0.107** (-2.67)	-0.073 (-1.49)	-0.109*** (-2.84)
Traditional Governance	0.028 (1.53)	0.022* (1.79)	0.024 (1.26)	0.023* (1.78)
Majority Election	0.090** (2.05)	0.082*** (3.03)	0.078 (1.46)	0.082*** (2.78)
Female Director	0.133*** (4.20)	0.128*** (3.66)	0.141*** (5.81)	0.124*** (3.64)
Controls	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Obs	6,278	14,253	4,532	15,999
Adjusted R^2	0.512	0.414	0.542	0.419

5. Female Effect is Very Strong.

Is it Characteristics Associated with Gender?, or Gender?

- Why it might be Characteristics
 - Ahern and Dittmar (2012) find that, compared to existing male directors, new female directors have significantly less CEO experience, are younger, and are more highly educated.
 - After controlling for these characteristics, there is no longer a robust relationship between female board membership and performance.
 - When we compare newly-hired female directors to newly-hired male directors, female directors have less CEO experience, are more educated, and are younger.
 - Such differences could drive the reported results.
- Why it might be Gender
 - Behavioral economics evidence finds females have stronger other-regarding preferences [e.g., Andreoni and Vesterlund, 2001; Adams and Funk, 2012; Thaler, 2016; Cronqvist and Yu, 2017]

5. Female Director Additional Tests

	ASSET4 Environmental z-Scores		Equally-weighted Environmental Scores	
	(1)	(2)	(3)	(4)
Family	-0.103*** (-3.36)	-0.102*** (-3.30)	-0.078*** (-3.16)	-0.077*** (-3.11)
Traditional Governance	0.027** (2.14)	0.025* (2.02)	0.020** (2.12)	0.019* (1.96)
Majority Election	0.072*** (2.77)	0.076*** (2.92)	0.060*** (2.76)	0.062*** (2.92)
One Female Director	0.110*** (3.86)		0.084*** (4.08)	
Two+ Female Directors	0.194*** (5.01)		0.156*** (5.87)	
Percent Female Directors		0.552*** (3.54)		0.452*** (4.13)
Controls	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Obs	20,531	20,531	20,531	20,531
Adjusted R ²	0.459	0.457	0.537	0.534

It is unlikely that some unobservable (to us) shock to the firm happens at the same time that every additional female board member is appointed. Thus, if we find a robust relationship for additional female board members, it is more likely the impact is related to gender and not something else.

Female Director Additional Tests – Include Board Characteristics

	ASSET4 Environmental z-Scores		Female Characteristics	CEO Experience	Higher Education
	(1)	(2)			
Female Director		0.145*** (5.31)	Below Median Group	0.123*** (4.80)	0.129*** (4.71)
CEO Experience	0.216*** (3.15)	0.220*** (3.58)	Above Median Group	0.085*** (4.50)	0.067*** (3.78)
Higher Education	0.128* (1.83)	0.090 (1.31)	Family	-0.097*** (-3.05)	-0.097*** (-2.97)
MBA	-0.029 (-0.22)	-0.056 (-0.44)	Traditional Governance	0.034** (2.59)	0.034** (2.56)
Age	-0.142 (-1.20)	-0.081 (-0.65)	Majority Election	0.061** (2.37)	0.062** (2.39)
Tenure	0.005 (1.14)	0.004 (1.18)			
Same Name	-0.003 (-0.85)	0.001 (0.28)			

Takeaways

- *Female result robust*
- *Not driven by differences in measured characteristics*
- *What drives it?: innate preference for other-regarding behavior, unmeasured differences, impact on groupthink.*

Model 1, full controls but no gov variables: CEO experience and Higher Ed improve E. Model 2 has all gov variables and board characteristics, Female still strong effect. Right hand table portion: new female director added that has low CEO experience or low Higher Ed: still get strong positive effect

6. Conclusions: G → E

- Roadmap - investors with a focus on environmental responsibility will be more effective if they don't focus on ESG, or even E alone. Governance is fundamental to E performance.
- All governance mechanisms have an impact, with contemporary governance mechanisms of board renewal having the strongest impact. (limits to independence alone)
- Female board representation particularly strong impact, not based on differences in measured characteristics. Impacts family firms.

- Implications for research on E and performance. E captures past G.
- Results consistent with a view that firms improve E because investors are asking for it.
- The theoretical framework suggests this push comes from investors constraining insider short-termism and/or from investors putting a high value on non-pecuniary benefits from E investments.

▪ THANK YOU

Summary Stats

Variable	Mean	Median
Family	0.225	0.000
ASSET4 Governance	0.559	0.567
Traditional Governance	3.652	4.000
Board Independence	0.466	0.000
Board Size	0.840	1.000
CEO-Chairman Separation	0.655	1.000
Board Structure	0.331	0.000
Audit Committee Independence	0.615	1.000
Stock Classes	0.744	1.000
Old or Stale Board	0.193	0.000
Majority Election	0.548	1.000
Female Director	0.596	1.000
One Female Director	0.311	0.000
Two+ Female Directors	0.286	0.000
Percent Female Directors	0.103	0.091